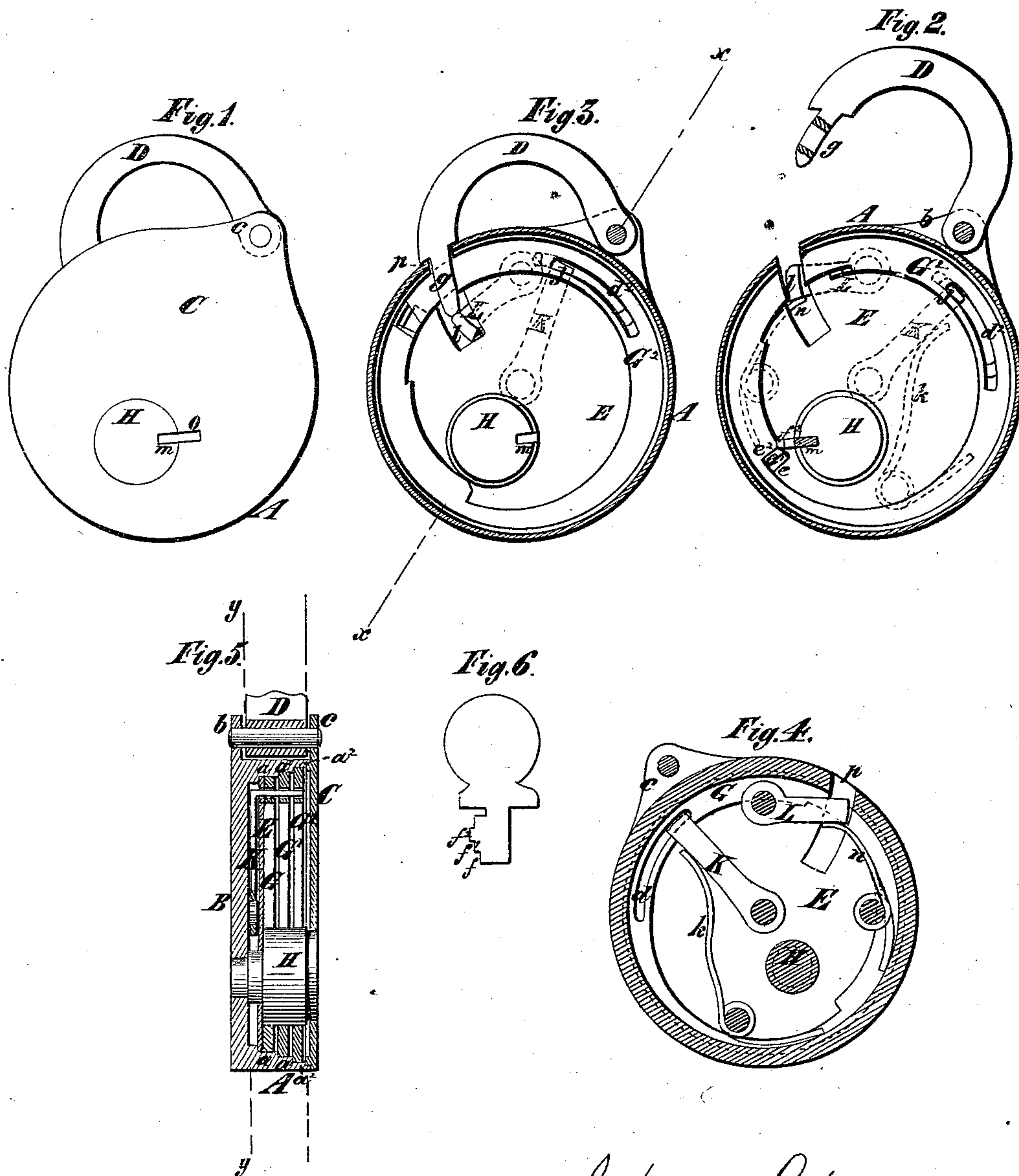


J. SCHADE.  
Pad-Locks, &c.

No. 159,772.

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Witnesses:

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# UNITED STATES PATENT OFFICE.

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## IMPROVEMENT IN PADLOCKS, &c.

Specification forming part of Letters Patent No. 159,772, dated February 16, 1875; application filed September 29, 1874.

*To all whom it may concern:*

Be it known that I, JOHN SCHADE, of Stamford, county of Fairfield and State of Connecticut, have invented new and useful Improvements in Padlocks; and I hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, which forms a part of this specification.

This invention consists in the combination, with the rim of the inclosing-case of a padlock, of a series of steps or projecting ledges, so arranged as to constitute independent seats for a corresponding number of annular tumblers of different diameters, whereby the said tumblers are prevented from riding upon each other, and each tumbler is enabled to move easily and freely without interfering with the others. It also consists in the combination of a number of elements for producing a novel, simple, and durable padlock, as will be hereinafter fully set forth.

In the accompanying drawing, Figure 1 is a front view of a padlock embodying my invention, it being shown in a locked condition. Fig. 2 is a front view of the same in an unlocked condition, the face-plate or cap being removed to disclose the interior. Fig. 3 is a front view of the same in a locked condition, the face-plate or cap being likewise removed. Fig. 4 is a section of the padlock, taken on the plane of the dotted line *y y*, Fig. 5. Fig. 5 is a transverse section of the same, taken on the plane of the dotted line *x x*, Fig. 3; and Fig. 6 is a side view of the key.

A B C designate the case of the padlock—A designating an annular wall or band; B, a circular back plate cast with or attached to such wall or band; and C, a face-plate, which is secured to the front edge of the said wall or band in any suitable manner. The case above described is cylindrical, but it may be made of any desirable external shape—for instance, shield shape, like the cases of ordinary padlocks, but its interior must be cylindrical, to properly contain the tumblers, which will be presently described. D is the hasp or bolt of the padlock, and it is of the usual construction, its fast end being pivoted to the lugs *b c*. On the inner periphery of the wall A there is a series of separate and entirely independent

concentric circular ledges corresponding to the number of tumblers, which, in the present instance, are three, *a a<sup>1</sup> a<sup>2</sup>*, each being of greater diameter than the one below it, so as to form separate steps or shoulders. E designates a plate, which rests against the ledge *a* in such manner as to divide off a space at the back of the case for containing the mechanism for operating the tumblers. G G<sup>1</sup> G<sup>2</sup> designate a series of annular tumblers, three in number, that G resting against the plate E, and the other two, G<sup>1</sup> G<sup>2</sup>, against the ledges *a<sup>1</sup> a<sup>2</sup>*, respectively. These tumblers G G<sup>1</sup> G<sup>2</sup> are all provided with a transverse opening wide enough to receive the tongue *g* of the hasp. They are also respectively provided with longitudinal recesses or slots *d d<sup>1</sup> d<sup>2</sup>*, commencing at different distances from their locking ends, the slot *d* commencing nearest the locking end of its tumbler G, the slot *d<sup>1</sup>* commencing a little farther from the locking end of its tumbler G<sup>1</sup>, and the slot *d<sup>2</sup>* commencing the farthest of all from the locking end of its tumbler G<sup>2</sup>. These tumblers are also respectively provided at inversely different distances from their rear ends with shoulders *e e<sup>1</sup> e<sup>2</sup>*, the shoulder *e* being farthest from the end of its tumbler G, the shoulder *e<sup>1</sup>* being a little nearer the end of its tumbler G<sup>1</sup>, and the shoulder *e<sup>2</sup>* being nearest the end of its tumbler G<sup>2</sup>. The key (see Fig. 6) operates upon the shoulders *e e<sup>1</sup> e<sup>2</sup>* of the tumblers. Its bit is composed of three sections, *f f<sup>1</sup> f<sup>2</sup>*, which are of different lengths, and respectively operate upon the shoulders *e e<sup>1</sup> e<sup>2</sup>* of the tumblers G G<sup>1</sup> G<sup>2</sup>, the section *f* being the shortest, the section *f<sup>1</sup>* being a little longer, and the section *f<sup>2</sup>* the longest of the three. A key so made will move the tumbler G the shortest distance, the tumbler G<sup>1</sup> a little farther, and the tumbler G<sup>2</sup> farthest of all, and thus bring their ends into line opposite the opening *p* in the wall A of the case. Hence, if a wire or other article be used to pick the lock it will press alike against all the shoulders of the tumblers, and will force the rear end of the tumbler G through the tongue of the hasp before it withdraws the forward end of the tumbler G<sup>2</sup> entirely from the said tongue, and therefore will not release the hasp. H designates a revolving hub, which is arranged in the case A B C, with



its front projecting through to the front of the face-plate C. It is provided with a mortise, *m*, for the shank of the key, and the face-plate is provided with a key-hole or opening, *o*, through which the bit may be passed into the lock when the mortise of the hub is in line with it. This opening *o* is preferably arranged at the side of the hub H farthest from the shoulders *e e<sup>1</sup> e<sup>2</sup>*, as shown in the drawing, Fig. 1, so as to prevent a wire or other instrument inserted through the key-hole from reaching the shoulders *e e<sup>1</sup> e<sup>2</sup>*. K designates an automatic actuator for moving the tumblers. It is located between the back plate B and plate E, and swings back and forth in a path concentric with the tumblers G G<sup>1</sup> G<sup>2</sup>. It carries at the outer end an arm, *j*, which projects into the slots *d d<sup>1</sup> d<sup>2</sup>* in the tumblers, and it is impelled toward the opening *p* in the wall A of the case by a spring, *k*, which presses against it. L designates a tongue provided with a head, *l*, which projects through the plate E. The said tongue is pivoted between the back plate B and said plate E near the rim or wall A, and in such position relatively to the opening *p* therein that when not held back by the hasp it will be swung round, and will eject the hasp, and obtrude itself between the ends of the tumblers when impelled by a spring, *n*, which presses against it. This is the normal condition of the padlock when it is unlocked. To lock it the tongue of the hasp is pushed into the case, forcing back the tongue L, and, when the eye of the hasp arrives opposite the ends of the tumblers G G<sup>1</sup> G<sup>2</sup>, the automatic actuator K shoots the tumblers through the eye of the hasp. To unlock the padlock the

key is inserted in the hub H, and turned so that its bit will press against the shoulders *e e<sup>1</sup> e<sup>2</sup>* of the tumblers. In this way the ends of the several tumblers are brought into line with each other opposite the opening *p* in the case, and the spring-tongue ejects the hasp and obtrudes itself between the ends of the several tumblers, and holds them in a condition to receive the tongue *g* of the hasp. The plate E, inclosing the actuator K and the tongue L, prevents a wire or any instrument inserted through the key-hole from reaching them, and the arrangement of the shoulders of the tumblers renders them very difficult to operate by a wire or any article but the key.

It will be readily seen that the invention is applicable to other locks besides padlocks if a mortised tongue be provided for entering an appropriate aperture provided for it in the lock.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination, with the inclosing-case of a padlock, of a series of inwardly-projecting steps or ledges, so arranged as to constitute independent seats for a corresponding number of annular tumblers of decreasing external diameters, substantially as and for the purposes herein specified.

2. The combination of the case A B C, hasp D, plate E, ledges *a a<sup>1</sup> a<sup>2</sup>*, tumblers G G<sup>1</sup> G<sup>2</sup>, actuator K, and spring-tongue L, substantially as and for the purpose herein set forth.

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Witnesses:

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